Notice of Allowability	Application No.	Applicant(s)	
	10/806,583	THOMPSON ET AL.	
	Examiner	Art Unit	
	Rip A. Lee	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *April 13, 2007*.

2. ☒ The allowed claim(s) is/are *1-3, 6, and 8-13*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

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Claim 12, line 1 delete "wherein the second particles are"

Claim 12, line 2 delete "selected from the group consisting of mineral and polymer,"

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance: Claims 1-3, 6, and 8-13 are allowed over the closest references cited below.

The present invention is drawn to a liquid casting composition comprising a liquid polymerizable component, polycarboxylic acid or salt thereof having at least two carboxylic acid groups and having a molecular weight in a range of from 300 to 5000 g/mole, wherein the composition contains an ester of acrylic or methacrylic acid, and wherein the particles comprise (a) first particles having a distribution in the range from 1 to 100 microns and (b) second particles having a distribution in the range of from 3 to 5 mm, wherein the first particles are mineral and the second particles are selected from the group consisting of mineral and polymer.

Another aspect of the invention is drawn to a liquid casting composition as above, except the second particles second particles having a distribution in the range of from 3 to 5 mm are polymer.

A further aspect of the invention is a liquid casting composition as described in the second paragraph wherein the first particles having a distribution in the range from 1 to 100 microns are selected from the group consisting of aluminum trihydrate, aluminum monohydrate, magnesium hydroxide, and calcium carbonate.

KR 2003-30306 discloses a composition for making artificial stone comprising 25-35 wt % of rubble aggregate having a particle size of 1-5 mm, 18-28 wt % of rubble aggregate having a particle size of 5-10 mm, and 31-86 wt % of silica having a particle size of 80-100 μm. The composition also includes 8-12 wt % of unsaturated polyester, and 0.04-0.06 wt % of dispersant. The reference does not teach use of (meth)acrylic ester, nor does it disclose use of aluminum trihydrate, aluminum monohydrate, magnesium hydroxide, and calcium carbonate filler. The reference also does not teach use of polymer particles having a particle size of 3-5 mm. Lastly, there is no concrete disclosure as to the nature of dispersant. Taken together, the foreign reference does not teach or fairly suggest any of the three aspects of the present invention.

Makino *et al.* (U.S. 4,229,328) teaches a resin composition made from 20-70 parts by weight (pw) of polymerizable unsaturated polyester, 30-70 pw of reactive diluent that is an ethylenically unsaturated compound, not more than 40 pw of conductive filler (graphite) having a particle size of 10-300 μ, and 0.05-1 pw of conductive fiber (carbon fiber) having length of 1-10 mm. The unsaturated polyester has at least two unreactive carboxylic end groups and it is commercially available as POLYMAL 9607, MW = 1000. The reference does not teach or fairly suggest use of mineral or polymeric filler, as indicated in the instant claims.

Yanagase *et al.* (U.S. 6,028,127) teaches a casting composition for making artificial marble comprising methyl methacrylate monomer, inorganic filler having particle size of less than 50 μ, colloidal silica (1-100 nm), short fiber (0.2-3.5 mm), carbon black having particle size greater than 0.5 mm, opaque mineral particles (≥ 200 μ), and transparent polymeric particles (0.2-5 mm). The reference does not teach or fairly suggest use of the dispersant of the instant claims.

Minghetti (U.S. 6,177,499) discloses an acrylic sheet formed from a casting compositon containing methyl methacrylate sirup, fumed silica (7-30 mμ) and aluminum trihydrate having a particle size of less than 90 μ. The reference does not teach or fairly suggest use of the dispersant of the instant claims.

Osborn *et al.* (U.S. 4,221,697) teaches a liquid curable composition comprising methyl methacrylate, inorganic filler, and polymeric dispersant having a molecular weight in the range of 20,000 to 200,000. Clearly, the molecular weight of the dispersant lies outside the range recited in the instant claims.

Sasanuma *et al.* (JP 63-239052) teaches a composition for making artificial marble containing an acrylic resin, inorganic filler such as silica, metal flake, and polycarboxylic polymer dispersant commercially available as HOMOGENOL L-18 (Kao Corporation). The reference does not teach use of dispersant of the instant invention, and metal flake is not a mineral or polymeric filler, as indicated in the instant claims.

Ebnesajjad (WO 90/01470) discloses a liquid casting composition for making simulated granite comprising methyl methacrylate sirup, aluminum trihydrate (35 μ), titanium dioxide (25-

50 mesh; 0.3-0.7 mm), and pigment particles of similar dimension. The reference does not teach use of the dispersant of the instant claims.

Okuno *et al.* (U.S. 5,281,633) discloses an unsaturated polyester molding compound for making profile articles such as kitchen counters. The composition contains aluminum hydroxide (2-5 μ) as transparent filler, glass powder (80-200 mesh; 0.07-0.18 mm), and crosslinked polystyrene particles (20-50 μ). The reference does not teach use of the dispersant of the instant claims.

Yugawa *et al.* (JP 1-230625) teaches a resin composition for making artificial marble comprising a radical polymerizable monomer, *i.e.* styrene, a thermoplastic resin soluble or dispersible in the monomer, an epoxy resin, a polycarboxylic acid anhydride (maleic anhydride), and inorganic filler. The reference does not teach the subject matter of the instant claims.

Yukawa *et al.* (U.S. 5,212,217) teaches a resin composition for making artificial marble comprising a radical polymerizable monomer, a thermoplastic resin soluble or dispersible in the monomer, an epoxy resin, a polyfunctional carboxylic acid, and inorganic filler such as aluminum trihydrate. The polyfunctional carboxylic acid is a low molecular weight compound such as maleic acid, adipic acid, trimellitic acid, and pyromellitic acid (MW = 254). Use of poly(meth)acrylic acid polymer is contemplated, however, the reference does not disclose or suggest use of such polymer having the molecular weight range recited in the instant claims. In addition, the reference does not teach the filler combination and size distribution recited in the instant claims.

Quackenbush (U.S. 2005/0096417) teaches a resinous curable composition comprising an epoxy resin, at least one carboxylic acid anhydride, at least one inorganic filler wherein at least 80 % of particles have a particle diameter of 10-40 μ, and at least one inorganic filler (sand or granite) wherein at least 80 % of particles have a particle diameter greater than 90 μ. The reference does not teach or fairly suggest use of the dispersant of the instant claims.

Daidone (U.S. 4,115,479) teaches a casting composition comprised of 20-65 wt % of resin prepared from methyl methacrylate, a vinyl resin having a particle size within the range of 0.2-5 μ, and a second vinyl resin having a particle size within the range of 15-150 μ. The reference does not teach or fairly suggest use of the dispersant of the instant claims.

Ganai *et al.* (JP 2-86642) teaches a composition for making artificial stone comprising a *bis*allyl compound containing a di- or trihydridic alcohol/carbonate oligomer, organic filler (particle size on order of microns) selected from silica, glass, aluminum trihydrate, magnesium hydroxide, or mica, and a polymeric dispersant. The dispersant is an unsaturated ester carbonate or a poly(meth)acrylate polymer, commercially available in pellet form. Clearly, the reference does not teach or fairly suggest use of the dispersant of the instant claims. In addition, the reference does not teach the filler size distribution recited in the instant claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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April 26, 2007

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